

This page Is Inserted by IFW Operations  
And is not part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of  
The original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
Please do not report the images to the  
Image Problem Mailbox.**

This composition is not described in the prior art cited by the Examiner under 35 U.S.C. § 103(a). In particular, nothing in the three prior art documents cited by the Examiner direct the selection of those surfactant systems with at least one paracrystalline phase appearing above 30°C and remaining up to at least 45°C because the prior art does not describe any paracrystalline phase and the prior art does not describe a foaming **cream** composition.

Dahms (U.S. patent 5,911,981) describes surfactant-containing liquids that upon dispersion with air or gas yields foam (for example, shaving cream) (see col 1, lines 5-15 and 39-50). Therefore, Dahms is completely different from the claimed invention, which is directed to a **cream** composition.

In addition, while Dahms does describe hexagonal structures (col. 2 and Figures 2-4), these hexagonal structures are bubbles resulting from the dispersion of air into a surfactant liquid but are not a paracrystalline phase as required in the present claims.

This description of Dahms is consistent with actual physical data, which is attached hereto in a Declaration under 37 C.F.R. 1.132. In this Declaration, Ms. Aubrun prepared a formulation according to the description in column 12, line 64 to column 13, line 13 in Dahms. As clearly shown in Exhibit 1 of the Declaration, the Dahms composition is liquid, whereas the composition prepared in Example 1 of the present application was a **cream** composition (see Exhibit 2 of the Declaration, which compares the Dahms composition to the Example 1 composition).

In addition, Ms. Aubrun conducted microscopic analyses of the Dahms liquid composition and observed that the Dahms composition did not contain a hexagonal phase, which is completely different from the present Example 1 composition, which possessed the hexagonal phase (see Exhibit 3- A) and B) are the Dahms composition, the photograph at the

bottom of Exhibit 3 is the present Example 1 composition). The structures shown in the photograph corresponding to the present Example 1 composition in Exhibit 3 are characteristic of the hexagonal phases as demonstrated by the attached two publications. In the first publication (*The Aqueous Phase Behavior of Surfactants*, Robert G. Laughlin, Academic Press, 1996), the Figure A4.5 in the Appendix 4 shows the “oily streaks” characteristic of the hexagonal phase. In the second publication (Brown, G. H. (ed.) (1975) *Advances in Liquid Crystals*, Academic Press) on pages 14 and 15, Table 1 summarizes the characteristics of various crystalline phases--see, for example, items 4, 5, and 6 relating to hexagonal structures and the “Shorthand description of the supposed Structure” in column 4 of that Table. Characteristics of hexagonal phases are further discussed on pages 18-19 of this second publication.

Combining Erilli (U.S. patent 5,629,279) and Ribier (U.S. patent 5,601,833) with Dahms does not compensate for Dahms' deficiencies.

In particular, Erilli describes a liquid detergent composition with water soluble nonionic surfactants: “[a]ll of the aforesaid ingredients in this light duty **liquid** detergent are **water soluble or water dispersible** and remain so during storage” ( col. 7, lines 1-3 of Erilli). Therefore, like Dahms, Erilli does not describe a paracrystalline phase (see page 10, lines 20-23 of the present specification, which describes that a paracrystalline phase comprises a water-soluble surfactant and a water-insoluble surfactant) or a foaming cream composition as in the present claims.

Ribier (U.S. patent 5,601,833) describes compositions containing multiple dispersions of active agent-containing lipid vesicles (see col. 2, lines 10-53). However, Ribier, like

Dahms, Erilli, does not describe a paracrystalline phase or a foaming cream composition as in the present claims.

Therefore, the combination Dahms, Erilli, and Ribier does not provide any description or suggestion for the present claims, which provide foaming **cream** compositions with a surfactant system such that at least one paracrystalline phase of the direct and/or cubic hexagonal type appears when the temperature increases above 30°C and remains present up to at least 45°C, and an active agent. The fact that all three prior art references are directed to distinct compositions from that which is provided in the present claims precludes any motivation to modify the teachings of the prior art to arrive at the claimed invention. The present invention is not merely optimization of the surfactant system as has been asserted by the Office (page 5 of the Official Action, paper no. 9) but a distinct and patentable invention that was not described in any way by the prior art.

Likewise, the combined descriptions of these three prior art documents does not provide any reasonable suggestion for the attendant thermal stability properties of the foaming cream composition when formulated to include such a surfactant system.

In light of the foregoing, the present claims are not obvious in view of Dahms, Erilli and Ribier and as such Applicants request withdrawal of the rejection under 35 U.S.C. § 103.

The Office Action objected to claim 3 for failing to further limit the subject matter of claim 1. Although Applicants disagree with this objection for at least the reason that the relevant properties of the claimed compositions are not limited to the values set forth in claim 3, Applicants' canceling claim 3 renders this objection moot. Accordingly, Applicants respectfully request that this objection be withdrawn.

Applicants request that the Examiner consider (and initial as having been considered) all references submitted with the Information Disclosure Statement filed June 13, 2002. In particular, Applicants note that WO 99/51716 was not initialed in the returned signed copy of the PTO Form 1449 attached to the Office Action, Paper No. 9. Therefore, a copy of this PTO 1449 indicating that WO 99/51716 has been considered is requested.

Applicants submit that the present application is in condition for allowance. Early notice of such allowance is requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Richard L. Treanor, Ph.D.  
Attorney of Record  
Registration No. 36,379

Daniel J. Pereira, Ph.D.  
Registration No. 45,518



**22850**

Tel #: (703) 413-3000  
Fax #: (703) 413-2220

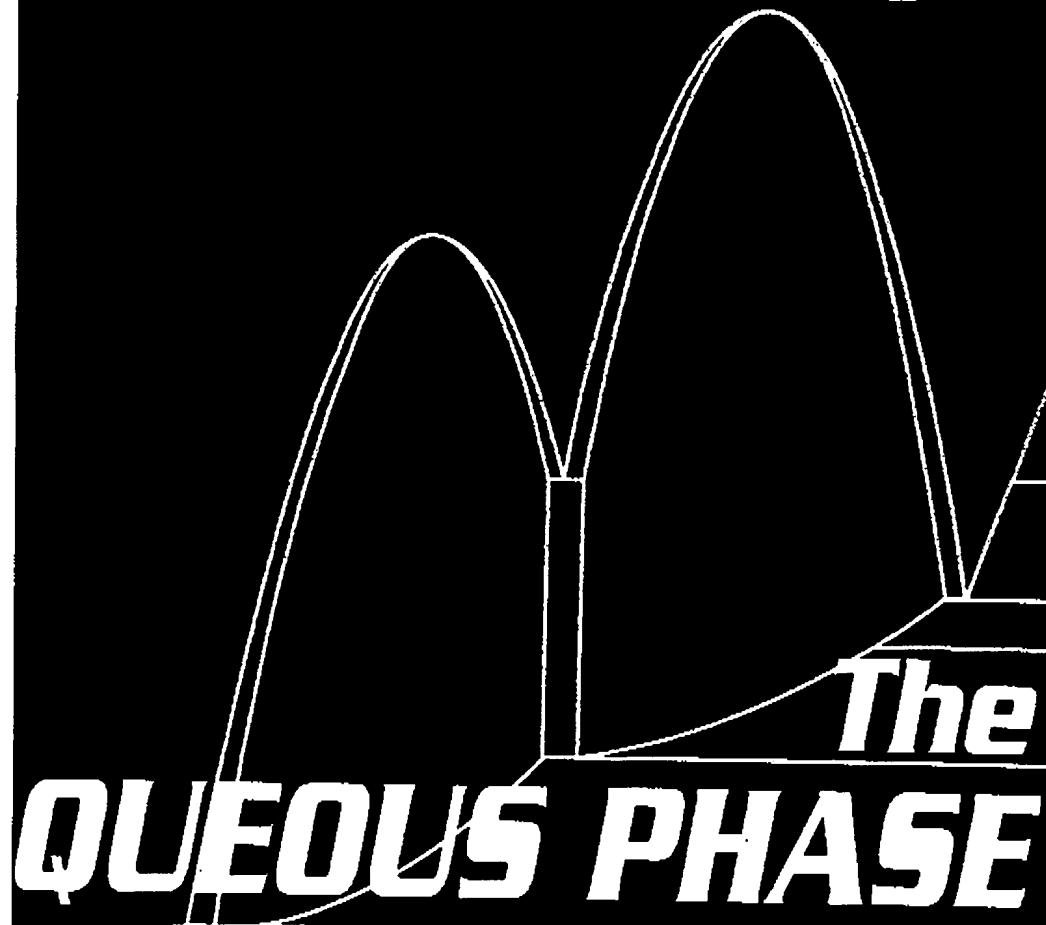
211813US0

**Marked-Up Copy**  
Serial No: 09/941,589  
Amendment Filed on:  
HEREWITH

**IN THE CLAIMS**

Claim 3 (canceled)

*Robert G. Laughlin*



The  
**QUEOUS PHASE**  
*Behavior of*  
**URFACTANTS**

TANTS



12

ase. 80 $\times$ . 7. Oily streaks in a phase between crossed polars and planar centers. Circular detail in birefringent border t from cross to pinwheel to top of lamellar phase in light-field (170 $\times$ ). 11. Fan-like lamellar phase in isotropic

oth composition and the mple, is entirely unrecog- lished beyond doubt that

X-ray studies, ideally in e short spacing at large and short spacings that display a few sharp lines he structure. A relatively n-chain packing is also

## APPENDIX 4 THE DETERMINATION OF PHASE DIAGRAMS

541

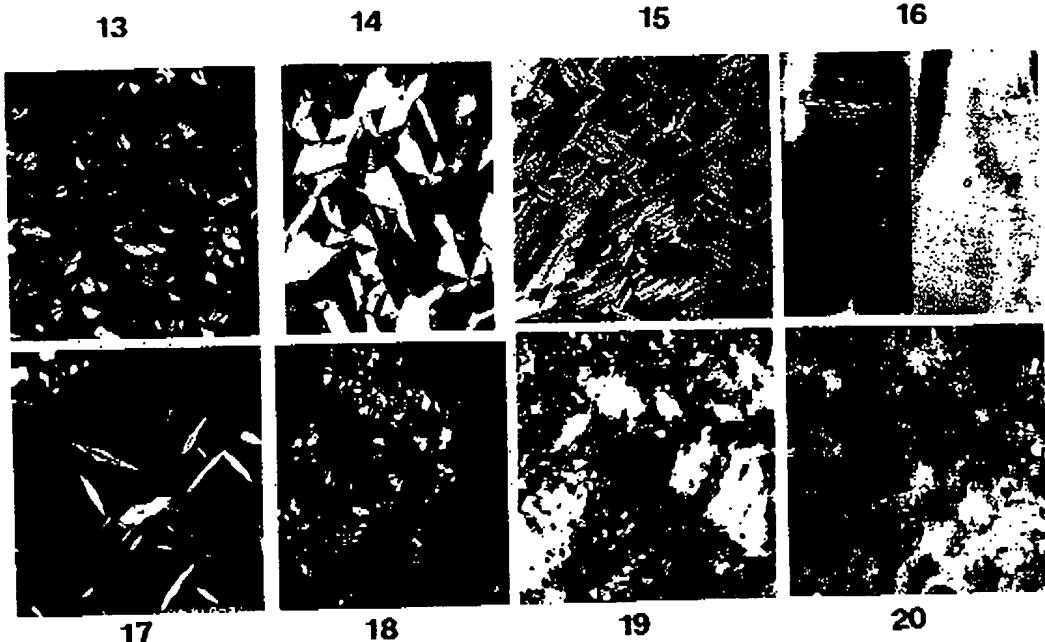


Fig. A4.5. Common textures of the hexagonal liquid crystal phase. 13. Fanlike units formed by evaporation of water from a 20% potassium laurate solution (140 $\times$ ). 14. Fanlike texture (70 $\times$ ). 15. Angular texture (70 $\times$ ). Note absence of pinwheels. 16. Zone of uniform extinction (35 $\times$ ). Left - with polars crossed; right - uncrossed 45°. 17. Batonnets of hexagonal in liquid phase (70 $\times$ ). 18. "Oily streaks" of hexagonal in liquid phase (280 $\times$ ). 19. Non-geometric, non-striated hexagonal phase (30% sodium palmitate, 140 $\times$ ). 20. Striations in non-geometric texture (70 $\times$ ).

*Isothermal studies.* In recent times the examination using NMR of mixtures in which D<sub>2</sub>O replaces H<sub>2</sub>O as the solvent, that have been equilibrated at a particular temperature, has been widely used during phase studies. The collection and analysis of the spectral data upon which phase identification is based are described elsewhere [13,14]. The combination of powder X-ray data with NMR data constitutes a powerful means of both determining and identifying phase structure. One may (on rare occasion) find that phases separate cleanly under the influence of gravity, and then classical isothermal analytic methods are appropriate. Application of strong gravitational fields to accelerate separation is, however, dangerous (Section 4.17.5).

Ideally, the preliminary studies of mixtures using isoplethal methods would be followed by isothermal swelling studies which provide quantitative data regarding phase boundary compositions. Since such a method does not presently exist, that approach is reserved for the future.

#### A4.6 Evaluating the quality of phase diagrams

Since 1875, the Phase Rule has provided a solid thermodynamic basis for evaluating the quality of a phase diagram. Phase diagrams that do not conform to the Phase Rule may

TABLE I  
COMMON LYOTROPIC LIQUID CRYSTALLINE PHASES<sup>a</sup>

14

Designation	Type	Basic structure	Shorthand description of the supposed structure	Optical properties	Alphabetical notation						
					Luzzati	Winsor	Ekwall				
<b>Phases characterized by one-dimensional periodicity; layer structures.</b>											
<b>Structural arrangement displaying Bragg spacing ratio 1:1/2:1/3</b>											
1. Neat phase "soap boiler's neat soap"		Lamellar, double layers	Coherent double layers of amphiphilic molecules with the polar groups in the interfaces with the intervening layers of water molecules	Anisotropic	L	G	D				
2. Single layered neat phase		Lamellar, single layers	Coherent single layers of amphiphilic molecules oriented with the polar groups towards opposite interfaces with the intervening layers of water molecules	Anisotropic	LL		D <sub>1</sub>				
3. Mucous woven phase		Lamellar, double layers	Coherent double layers of amphiphilic molecules with the polar groups in the interfaces with the intervening layers of water molecules	Slightly anisotropic	L <sub>2</sub>		B				
<b>Phases characterized by two-dimensional periodicity. Particle structures.</b>											
<b>Structural arrangement displaying Bragg spacing ratio 1:1<math>\sqrt{3}</math>:1<math>\sqrt{4}</math></b>											
4. Middle phase, normal	1	Two-dimensional hexagonal	Indefinitely long, mutually parallel rods in hexagonal array, with a hexagonal or circular cross-section; the rods consist of more or less radially arranged amphiphilic molecules	Anisotropic	H <sub>1</sub>	M <sub>1</sub>	E				
5. Middle phase, reversed	2			Anisotropic	H <sub>2</sub>	M <sub>2</sub>	F				
6. Hexagonal complex phase, normal	1	Two-dimensional hexagonal	Indefinitely long, mutually parallel rods in hexagonal array, possibly consisting of a double layer of amphiphilic molecules surrounding a core of hydrated polar groups and water and located in a water continuum	Anisotropic	H <sub>c</sub>		H <sub>c</sub>				
<b>Structural arrangement displaying one or two sets of Bragg spacings in ratio 1:1/2:1/3</b>											
7. Rectangular phase, normal	1	Two-dimensional orthorhombic	Indefinitely long, mutually parallel rods in orthorhombic array, and with a rectangular cross section	Anisotropic	R		R				
8. Square phase, normal "white phase"	1	Two-dimensional tetragonal	Indefinitely long, mutually parallel rods in tetragonal array and with a square cross section	Anisotropic		C					
9. Square phase, reversed	2			Anisotropic		K					
<b>Phases characterized by three-dimensional periodicity.</b>											
<b>Structural arrangement displaying cubic symmetry</b>											
10. Optically isotropic mesophase, normal "Viscous isotropic phase," normal	1	Body centered Space group Ia3d	Short rodlike elements (axial ratio near 1) joined in threes at each end to a three- dimensional network; two networks interwoven but unconnected	Isotropic	Q	V <sub>1</sub>	I <sub>1</sub>				
11. Optically isotropic mesophase, reversed "Viscous isotropic phase," reversed	2			Isotropic	Q	V <sub>2</sub>	I <sub>2</sub>				
12. Optically isotropic mesophase, normal	1	Body centered Possibly space group Pm3n	Possibly, spherical aggregates caged within a network of short rodlike elements joined in threes at one end and in fours at the other end.	Isotropic		F <sub>1b</sub> S <sub>1c</sub>	I <sub>1'</sub>				
13. Optically isotropic mesophase, reversed	2	Space group unknown	Structure unknown	Isotropic			I <sub>2'</sub>				
14. Optically isotropic mesophase, normal	1	Face centered, body centered or primitive	Polyhedral spherical aggregates in aqueous or lipophilic continuum. The existence of these structures not proven	Isotropic			I <sub>1</sub>				
15. Optically isotropic mesophase, reversed	2			Isotropic			I <sub>2</sub>				

Per Ekwall

Liquid Crystalline Phases in Systems of Amphiphiles

\* Optically isotropic liquid phases are designated S (by Winsor) and L (by Ekwall); S<sub>1</sub> and L<sub>1</sub> denote aqueous solutions, S<sub>2</sub> and L<sub>2</sub> solutions in organic solvents.

that the lamellar high temperature "neat soap" passes continuously into the "soap boiler's neat soap" (the common lyotropic "neat phase," D); at the high temperatures mentioned these phases seem to be separated by a two-phase zone\* [100, 102, 130] (Figs. 103, 104, 107).

The high temperature phases (150–400°C) of the anhydrous fatty acid soaps with bivalent cations display structures in which it has been proposed that the polar groups are clustered in rodlike regions and the rods, all identical and crystallographically equivalent, are either indefinitely long or of finite length and linked to form two- and three-dimensional networks [83, 124, 125]. In one of these proposals the rods are linked three by three at each end forming planar two-dimensional hexagonal networks. These networks are stacked regularly in a three-dimensional lattice (space group R3m). Structures with the polar groups of the molecules arranged in indefinitely long rods surrounded by disordered paraffin chains and packed in a two-dimensional hexagonal array occur quite commonly and seem to form mainly at higher temperatures.

These metal soaps are also able to dissolve hydrocarbons and other liquid organic compounds, often with the formation of liquid crystalline phases. For instance, calcium and cadmium laurate take up toluene at 110° with swelling. The structure of the phases seems not to have been examined further [54].

Unlike the above mentioned fatty acid soaps the anhydrous sodium di-2-ethylhexylsulfosuccinate (Aerosol OT) occurs as a liquid crystalline two-dimensional hexagonal phase even at 20°; the phase is stable up to about 160°. It can dissolve hydrocarbons and take up water (Figs. 44, 127). In this case under constant external conditions (temperature, pressure) there is definitely a gradual change from an anhydrous liquid crystalline phase to a liquid lyotropic mesophase which will be discussed later.

Some other amphiphiles also, when anhydrous, can occur in the liquid crystalline state even at room temperature [Aerosol MA, sodium and potassium di-(2-ethylhexyl)acetate, sodium hept-6-enylsulfate, sodium 2-ethylhexylsulfate (Fig. 128)]. The lack of solid crystallinity is in these cases obviously associated with chain branching [3].

\* The temperature-concentration diagrams of the alkali soaps presented in Figs. 103–112 were done in the 1930's and 1940's. More recent detailed diagrams for these important amphiphiles seem not to have been published. In order to avoid misunderstanding it may be mentioned that the region for "soap boiler's neat soap" does not extend to anhydrous soap (as indicated in Fig. 105), that one always seems to have a two-phase zone between the "high temperature neat soap" and the "soap boiler's neat soap" (as indicated in Figs. 103, 104, and 110–112 but not in Fig. 106), and that it is an unsolved question whether there really exists a two-phase zone between the regions for "soap boiler's neat soap" and "superneat soap" (as indicated in Figs. 104 and 107); the notation "neat soap" in Figs. 108–112 at about 60–70% soap and 140°C refers to "soap boiler's neat soap."

### III. LYOTROPIC LIQUID CRYSTALLINE PHASES

#### A. Mesophases with Rodlike Aggregates of the Normal Type

##### 1. THE MESOPHASE IN REGION E

The earliest reported lyotropic mesophase now known to have rodlike aggregates is the "middle soap" studied in soap-water systems by McBain. In these and similar binary systems the phase appears at suitable temperatures at concentrations just above the upper limit of solution region L<sub>1</sub>.

The middle soap can often incorporate various additional lipophilic and amphiphilic compounds. Its region of existence, designated E, then extends from the soap-water axis of the triangular diagram of the ternary system up toward the center. There is, with a third component, usually no appreciable increase in its capacity for incorporating water (Figs. 46, 49, 61, 70), but some exceptions to this are known (Figs. 65, 98).

At higher water content phase E is usually in equilibrium with the aqueous solution L<sub>1</sub> via two- and three-phase zones, and at lower water content it is in equilibrium with the crystalline soap or the lamellar neat phase, depending on the temperature and the nature of the amphiphile (Figs. 49, 103). In some systems, however, the transition to the neat phase occurs through an intermediate stage, consisting of one, or perhaps two, other mesophases with rodlike structure (Fig. 63) or through an optically isotropic mesophase (Fig. 118), and occasionally even through an isotropic solution L'<sub>1</sub> (Figs. 67, 68). Examples are found where the transition between E and L<sub>1</sub> can also occur via an optically isotropic mesophase (Figs. 98, 118).

The boundaries of the region of existence of phase E can readily be determined by separation in a high speed centrifuge. An impression of the extent of the region can also be obtained from microscopic and X-ray diffraction examinations.

Throughout its region of existence the mesophase E is a stiff gel; viscosities of about 20–45 P have been recorded. The mesomorphic substance is fairly transparent and anisotropic; under the microscope between polaroid plates it displays a fanlike or angular texture (Fig. 27a). The pinhole pattern of the X-ray diffraction in the low-angle region often shows rings with discrete spots in hexagonal array, the sets of spots in successive rings being mutually displaced through an angle of 30°; the rings have a spacing ratio of 1:1: $\sqrt{3}$ :1: $\sqrt{4}$ . The substance thus has a two-dimensional hexagonal structure. The experimental results are consistent with a structure consisting of parallel amphiphilic rods in hexagonal array [68, 85, 87]; the rods are considered to be composed of more or less radially disposed molecules of amphiphile with the hydrocarbon parts directed inwards and the hydrated polar groups facing outwards. The hydrocarbon cores of the rodlike aggregates are thus separated

Docket No. 211813US0

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

## IN RE APPLICATION OF

Elisabeth PICARD-LESBOUERYRIES, et al. : EXAMINER: JIANG

SERIAL NO: 09/941,589

FILED: MARCH 27, 2001 : GROUP ART UNIT: 1617

FOR: FOAMING COSMETIC CREAM FOR TREATING  
GREASY SKIN AND METHODS FOR USING THE SAMEDECLARATION UNDER 37 C.F.R. § 1.132HONORABLE COMMISSIONER OF PATENTS AND TRADEMARKS  
WASHINGTON, D.C. 20231

SIR:

Now comes Odile AUBRUN who deposes and states that:

1. I am a graduate of Ecole Supérieure de physique et de chimie Paris and received my diploma degree in the year 1994.
2. I have been employed by L'Oréal for 5 years as a researcher in cosmetic formulation.
3. I performed the following experiments.
4. The following data demonstrate that a formulation prepared according to the description in U.S. Patent no. 5,911,981 is a transparent solution and not a foaming cream composition. The following data also demonstrate that the formulation according to U.S. Patent no. 5,911,981 did not have a hexagonal phase.
5. A formulation according to the description in column 12, line 64 to column 13, line 13 in U.S. Patent no 5,911,981 was prepared as follows:

Ingredient	% by weight
Sodium lauryl ether sulfate 2.2 OE	1.2
Cocamidopropylbetaine	5.2
Sodium lauroyl lactylate	1
Demineralized water	81.6

6. The resultant formulation was a transparent solution with a very low viscosity at 20°C compared to the solution at 45°C. A photograph of this solution is shown as Exhibit 1.

In addition, a side-by-side comparison of this solution relative to the formulation prepared in Example 1 of the above-identified application is shown as Exhibit 2. In this photograph, the foaming cream of Example 1 of the above-identified application is shown on the left, whereas the solution prepared according to the formulation in paragraph 5 above is shown on the right. As readily apparent the prepared formulation according to U.S. Patent no 5,911,981 is a liquid while the formulation of Example 1 of the above-identified application is a white cream.

7. The solution of paragraph 5 was also analyzed by optical microscopy at 45°C using white or polarized light. Photographs of the optical microscopic analyses are shown as Exhibit 3 where A) is the photograph of the solution in white light and B) is the photograph of the solution in polarized light. As is clearly evident in these photographs, the solution prepared according to U.S. Patent no 5,911,981 did not possess the characteristic texture of a hexagonal phase, which are oily shiny streaks. For comparison, a photograph of a formulation from Example 1 of the present application analyzed under polarized light at 45°C is attached as Exhibit 3 and shows the characteristic texture of a hexagonal phase (oily streaks).

8. I declare further that all statements made herein or of my own knowledge are true and that all statements made on information are believed to be true. Further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

Odile Aubrun

Odile AUBRUN

27<sup>th</sup> November 2002

Date

EXHIBIT 1



**EXHIBIT 2**

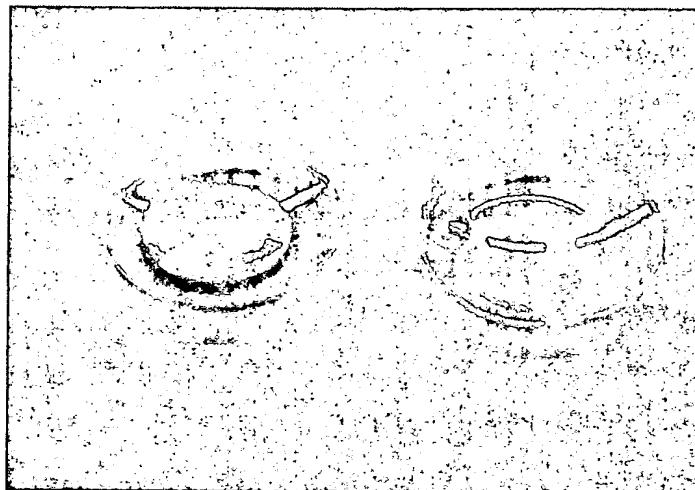
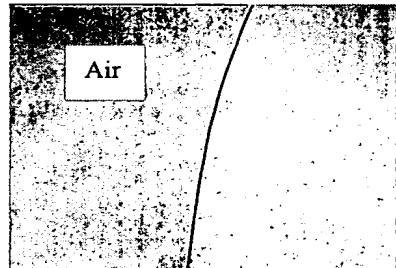


EXHIBIT 3

A)



B)

